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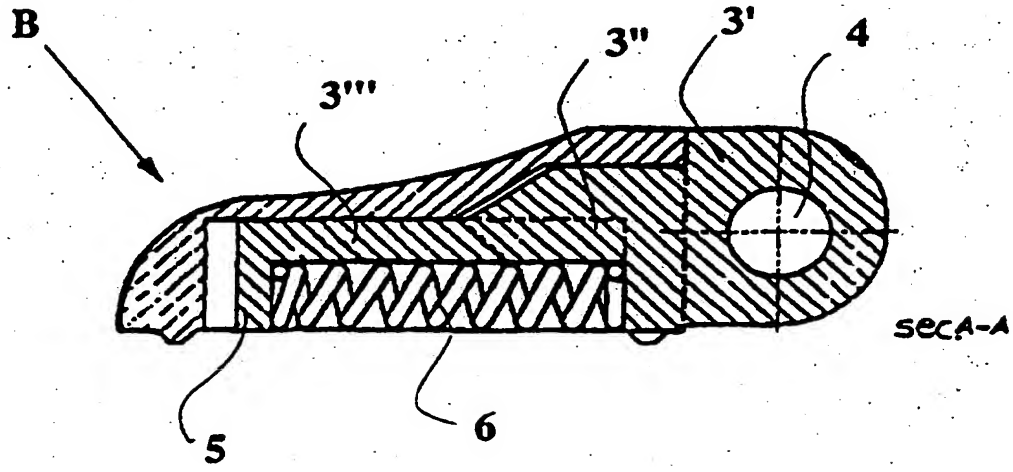
(54) Title: IMPROVEMENT OF A DEVICE, PARTICULARLY REDUCED, FOR THE ELASTICIZING OF ONE EAR-PIECE F SPECTACLES

(57) Abstract

Improvement of a bi-elastic device, particularly reduced, for the elasticizing of ear-pieces for spectacles, essentially comprising one small box, combined as finished with the ear-piece by spot-welding and pre-assembled, in whose inside are housed at least two springs, said springs on one side being with their end in abutment on the small box, on the other side being positioned in abutment of the end of a tie-rod, whose shape is substantially "L" like respect to which they are placed adjacent and parallel; while the opposite end of the same tie-rod, being external to the small box, is hingeable to a corresponding small front face provided on the frame of the spectacles.



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DESCRIPTION

IMPROVEMENT OF A DEVICE, PARTICULARLY REDUCED, FOR THE ELASTICIZING OF ONE EAR-PIECE FOR SPECTACLES.

Technical Field

This invention has for object the improvement of a bi-elastic device, particularly reduced, for the elasticizing of an ear-piece for spectacles. The innovation finds particular even if not exclusive application in the field of the spectacles production and of the metal small parts, not excluding their fittings.

Background Art

It is known that many frames for spectacles are found in prior art. Some of these, provide some devices, made close to the hinging, for allowing the elastic fastening to that part of the frame which is known as front face. Such function, obtained on both sides of the spectacles, on one hand has the advantage of giving a better fitting, because if the ear-pieces exert a lower pressure on the temples, they are more easily endurable by most people, on the other hand they would result more adaptable to the different anatomical shapes of each subject. The firms of the field therefore, are since a long time thus oriented, with the main purpose of finding innovative and often improving solutions, both with regard to the functioning and mainly to the size, when compared to the pre-existing ones.

For example, a traditional elasticized ear-piece, that found a wide consent among the consumers, consists of the European patent application n.79400087.7, in which was described an elastic hinge for spectacles frame, essentially made up of a box, associated sideways to the ear-piece, for containing a tie-rod means coaxial to said box, and in which the end portion of the tie-rod is threaded, on which is screwed a

bushing that ensures the positioning of a spring, while on the other side it is in abutment on the inside of a seat obtained in said box.

Again a system, conceptually based on the solution provided by the previous patent, may consist of the utility model n.181221, having for object an improved hinge for the articulation to a spectacles frame of an elastically openable ear-piece, in which it is provided a squared support inserted in the frame, on which it is inserted a support which is also squared that makes up a shoulder for the compression of a spring.

Finally, the Italian Patent n. 1 147 198, has for object an ear-piece for spectacles with elastic hinging, in which the end of the ear-piece involves an axially holed small block within which is inserted one end for the connection of the hinge. Continuing with a reduced diameter, it supports inserted a sharp edge that is fixed inside the borehole while on the back of this latter is provided a tension helicoidal spring blocked at the end of the element by a threaded locknut. In such case it is possible the elastic opening of the ear-piece according to a certain angle by means of elastic yielding of the hinge-like connection.

The drawbacks noticed, in general common in the mentioned solutions, consist essentially of the excessive complexity of the utilized devices, which involved also a total oversizing of the device. Furthermore, notwithstanding they perform their functions perfectly, they determine many problems during the manufacturing phases, on one side for what concerns the realization of the many precision components, on the other during their assembling, at the end influencing in considerable measure times and costs. Main purpose of the present firms of the field, has been therefore the obtainment of the elasticizing devices of the ear-piece, that, even being more restrained

in their size, offer a good functionality aiming at the same time to reducing the components, facilitating the assembling and diminishing the costs.

In the panorama of the recent devices, in line with the above mentioned principles, and that are more or less effectively proposed on the market, there is a solution in which the articulation is all one with the sliding body for the containing of an elasticizing spring of the ear-piece. In more detail said body, has a square cross section, in which longitudinally has been removed some material from one part to the other, up to obtain opposite thin sheets which define the guide seat, making up the containing walls of a spring. On one side, the spring is placed in abutment on said seat, while on the other, it is fastened to a tooth which protrudes respect to the profile defined by the sliding body. Of the device considered, is part also a half-hull, opened on one side to be then associated to an ear-piece, and on the inside of which is inserted the sliding body complete of the spring, turning the tooth on the longitudinal surface in which is obtained a stop reference. Being in a traction condition, the articulation obliges the body to slide on the inside of the half-hull maintaining the tooth constantly gripping along the base of said half-hull, up to compress the spring, therefore recalling elastically the articulation itself.

It is also very common the condition of fastening to said box pre-assembled on the end of the ear-piece, the elastic yielding group, essentially consisting of an articulation on which is screwed a tie-rod coaxial to a spring, fastened on the opposite side by a suitable bushing.

As a consequence, it is possible to notice at least two drawbacks, on one side, the need for an adequate size, which influences the weight of the structure, aesthetics not excluded, on the other, the use of screw means

involves considerable assembling times, and therefore also considerable costs. For some ear-pieces, considered valuable, the system is still valid, as seen by their wide use, but for the others, directed to a wider public, the device would not be anymore convenient, because it should suit costs of the frame definitely more contained. The continuous research in the field, in recent times, was therefore directed towards alternative devices, designed for being promoted in a great amount and mainly able to obviate the use of the spring passing the box for the fastening of the elastic yielding group.

It is known also the French Patent n. 2 517 080. More in detail is again described a hinge for spectacles frame, in which the metal core is all one with the articulation hinged to the front face. More in detail, the core is placed, passing from one side to the other, coaxial to a box, which near to one end provides an housing able to contain an helicoidal compression spring. This latter, on one side is positioned in abutment on the annular edge obtained through a working internal to said box, on the other side is being positioned on the end partially inserted inside the box and which covers the end of said core. The effect obtained by opening the era-piece, consists in visualizing the coaxial sliding of the end with respect to the box containing the device. The drawbacks of this latter solution consist of the fact that are still required some complex components, which would make particularly difficult the manufacturing and assembling, not excluded some manufacturing costs which would affect considerably the finished product.

Always in prior art, are known other improved elastic yielding devices, which derive more or less from the previously described solutions, and in which are anyway observable some problems related to the large

size of the articulation.

The fact of being particularly bulky, with regard to the elasticizing device, on one hand is unpleasant to see, on the other it is with no doubt limiting, because the ear-piece shape conditions its application. Other negative aspects, commonly noticeable in the mentioned solutions, regard the fact that it is no possible to combine the already finished device directly with the ear-piece, thus involving rather long assembling times. Finally, the traditional ear-pieces have a tie-rod which, because of its shape, allows an excessive slack, being inclined to a torsion, not much liked by the consumer. Purpose of this invention is to obviate the mentioned drawbacks.

A proposal of the same applicant consisted of a device, particularly reduced, for the elasticizing of an ear-piece for spectacles, essentially comprising a small box, combined as finished with the ear-piece by spot-welding and pre-assembled, in whose inside are housed two springs, said springs, on one side being with their end in abutment on the bottom of the small box , on the other side being placed in abutment of the end of a tie-rod, with respect to which they are placed one for each side; and in which the shape of the tie-rod is substantially "T" like having the opposite end, provided with a suitable hole, hingeable to a corresponding small front face provided on the frame of the spectacles. Another purpose of this invention is that of improving the previous solution.

This and other purposes are reached with the present invention according to the characteristics to be found in the enclosed claims, solving the mentioned problems by improving a bi-elastic device, particularly reduced, for the elasticizing of the ear-pieces for

spectacles, essentially comprising a small box, combined as finished to the ear-piece by means of spot-welding and pre-assembled, in whose inside are housed at least two springs, said springs on one side being with one end in abutment on the small box, on the other being placed in abutment of the end of a tie-rod, whose shape is substantially 'L" like with respect to which they are placed adjacent and parallel, while the opposite end of the same tie-rod, being external to the small box, is hingeable to a corresponding small front face provided on the frame of the spectacles.

In such way, through a considerable creative contribution whose effect represents an immediate technical progress, are obtained many advantages. First of all it is obtained a substantial reduction of the size, mainly of the length, that besides being a considerable aesthetic advantage, allows the widening of the range of the tie-rods on which said device can be used. A second aspect, non less important, is the fact that because of the particular 'L" like shape of the tie-rod, are avoided those negative slacks, mainly torsion ones, very common in the linear mono-elastic tie rods, diminishing the components wearing. For what concerns the productive aspect, some advantages consist of that the device is completed before being combined with the ear-piece, and therefore, combined as finished to this same with a substantial reduction of manufacturing times and costs.

In conclusion, there will be a considerable functionality-price ratio, making possible the use of the elastic yielding device in a great amount of spectacles, thus widening the base of the possible consumers.

These and other advantages will appear from the following detailed description of preferred embodiments with the aid of the enclosed schematic drawings whose manufacturing details are not to be

considered as limitative but only as examples.

Figure 1. represents a total view and seen from the open side of the small box, of the main part of an elastic yielding device, to be combined with a corresponding tie-rod.

Figure 2., represents a longitudinal section view of the device of Figure 1., seen respectively along the axis A-A.

Figure 3., is a total and partially sectional top view of the device of the previous figures in its operating conditions.

Figures 4. and 5 represent respectively a bottom and side view of the small box, as a part of the elastic yielding device.

Finally, Figures 6 and 7 represent a view of the two sides of a tie-rod having an end shape of the "L" like type.

Referring also to the figures, it can be seen that at least one ear-piece (A), particularly for spectacles, is elastically yielding for allowing, when these are worn, the opening of these ear-pieces beyond the common opening axis, generally perpendicular, with respect to the frame (D). More in detail, each metal ear-piece (A) of the spectacles, provides as combined on a flat side, and in correspondence of one end, an elastic yielding device (B), which interacts with a device part (C), called small front face, and engaged in turn on the spectacles frame (D). The elastic yielding device (B)consists of a small box (1), having rather contained size, open (1') on the fixing side on the corresponding ear-piece (A). Along the perimetrical edge of the small box (1), always on the open side (1 '), are provided three coplanar protrusions of exceeding material (1"), respectively two in the front part and only one in the back part. Said protrusions or teeth (1"), during a following cycle of spot welding by electro-welding, melt with the part of the ear-piece (A) concerned, allowing the definite and steady fastening of the

small box (1), and therefore of the device (B). A second characteristic, always of the small box (1), is that of providing a longitudinal opening (2) which concerns its edge in correspondence of the front part, and which requires some perpendicular walls (2') respect to a base surface (2"). The purpose of said opening (2), is that of allowing the axial guide of a tie-rod (3), said tie-rod being in part housed inside of the small box (1), and in part protruding from this latter through a flat surface (3') for being hinged to the small front face (C) of the spectacles (D). The flat surface (3') of the tie-rod (3) provides the rounded edge and a central hole (4) for the hinging of the group era-piece (A) - device (B), to the small front face (C), while on the opposite side, the portion of tie-rod which protrudes inside of the device (B) includes a flat surface (3''') turned of 90° respect to the front part (3'), which is followed by an end section or wing (5) perpendicularly folded respect to the flat surface (3'''). This therefore recalls a typical "L" like shape. An intermediate part of the tie-rod (3) consists of the portion (3"), which provides an oblique section which, together with the sloping surface (1''') of the small box (1) the end-stroke of the tie-rod (3).

Substantially the portion (3") , is a positive copy of the shape of the guide seat (2) obtained in the small box (1), allowing in a non-operating condition, to keep the springs slightly operating, thus avoiding any slack mainly of the tie-rod (3). In phase of assembling, it is thus possible to insert into the small box (1), first the tie-rod (3) and then the springs (6), or also both of these latter together, which by forcing slightly into the housing will result pre-charged.

The wing (5) is obtained monolithically from the tie-rod (3), allowing to define a lateral housing, inside of which, in contact with the side (3''') is housed a couple of helicoidal springs (6) parallel and adjacent.

Even more in detail, both springs (6) are placed with one end (6') in abutment on the bottom of the front part of the small box (1), while with the opposite end (6") are in abutment on the corresponding wing (5). By exerting an axial traction of the tie-rod (3), condition which is like the opening beyond the usual opening angle of the ear-piece (A), is obtained a compression of both wings (6), which in this way contrast its action. As a consequence, the ear-piece (A) hinged to a corresponding front face (C) will yield elastically, respect to the front of the frame (D), pulling the tie-rod (3) and contemporaneously compressing the springs (6), internally pushed towards the shoulder of the front part of the small box (1).

Thus, the natural extension of the springs (6), allows to the spectacles, first to be properly and softly worn by modulating the pressure exerted by the ear-pieces on the temples, and then, when no more used, the return to a static condition.

Claims

1. Improvement of a bi-elastic device, particularly reduced, for the elasticizing of the ear-pieces for spectacles, essentially comprising a small box (1), combined as finished with the ear-piece (A) by spot-welding and pre-assembled, inside of which are previously housed at least two springs (6), said springs on one side being with their end in abutment on the small box (1), and characterized in that the springs (6) on the opposite side (6") are placed in abutment of the end of a tie-rod (3) which is substantially "L" like shaped.

2. Improvement, according to claim 1. characterized in that the springs (6) respect to the tie-rod (3), are placed adjacent and parallel.

3. Improvement, according to claims 1 and 2. characterized in that a tie-rod (3), partially housed inside of the small box (1), and partially protruding from this latter, consists of:

- a front part which is a surface (3') to be hinged to a small front face (C) of the spectacles (D), which provides a central hole (4) for the hinging of the group ear-piece (A) - device (B), to the small front face (C);
- an intermediate part consisting of the portion (3"), which provides an oblique section which, together with the sloping surface (1''') of the small box (1), is the end-stroke of the tie-rod (3);
- and a back part which protrudes inside of the device (B) comprising a straight surface (3'''), which is followed by an end section (5) perpendicularly folded respect to said surface (3''')

4. Improvement, according to previous claims, characterized in that the back part which protrudes inside of the device (B) includes a flat surface (3''') turned of 90° respect to the front part (3'), which is followed by an end section or wing (5) perpendicularly folded respect

to the flat surface (3''').

5. Improvement, according to previous claims, characterized in that the portion (3") is the positive copy of the shape of the guide (2) obtained inside the small box (1).

6- Improvement, according to previous claims, characterized in that the small box (1) has a longitudinal opening (2) which concerns its edge in correspondence of the front part, and which provides some perpendicular walls (2') respect to a base surface (2")

7. Improvement, according to previous claims, characterized in that the wing (5) is monolithically obtained with the tie-rod (3), defining a lateral housing, inside of which, in contact with the side (3''') are housed a couple of helicoidal parallel and adjacent springs (6).

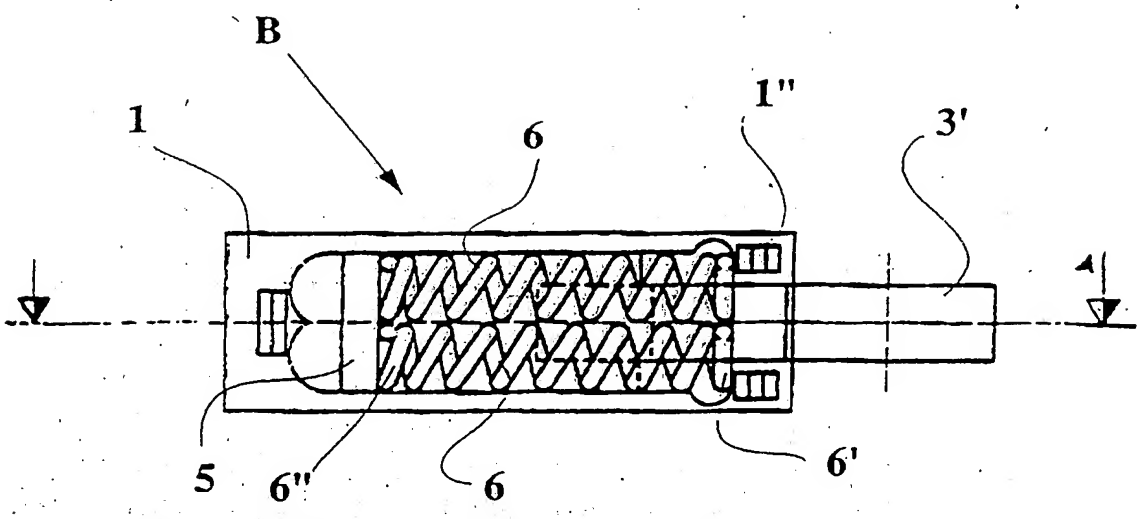

Fig. 1

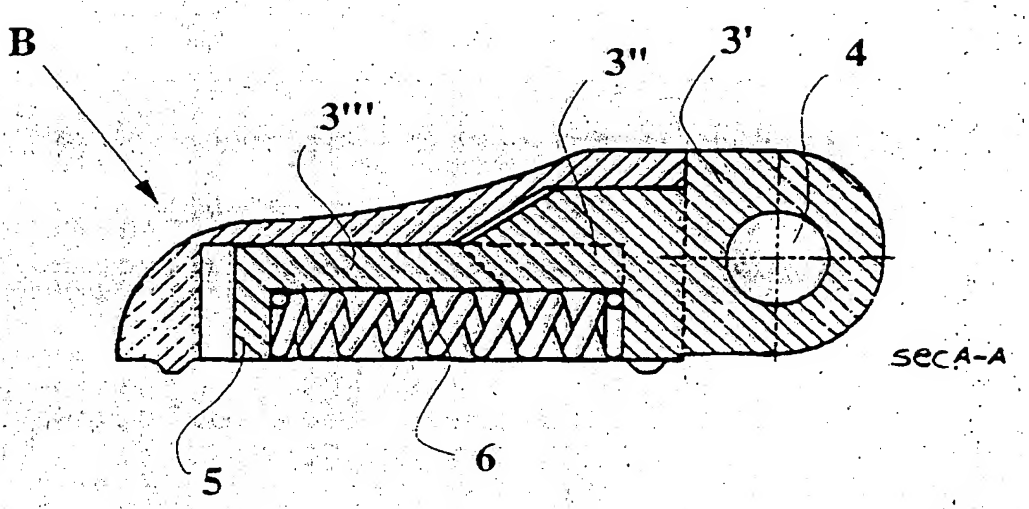

Fig. 2

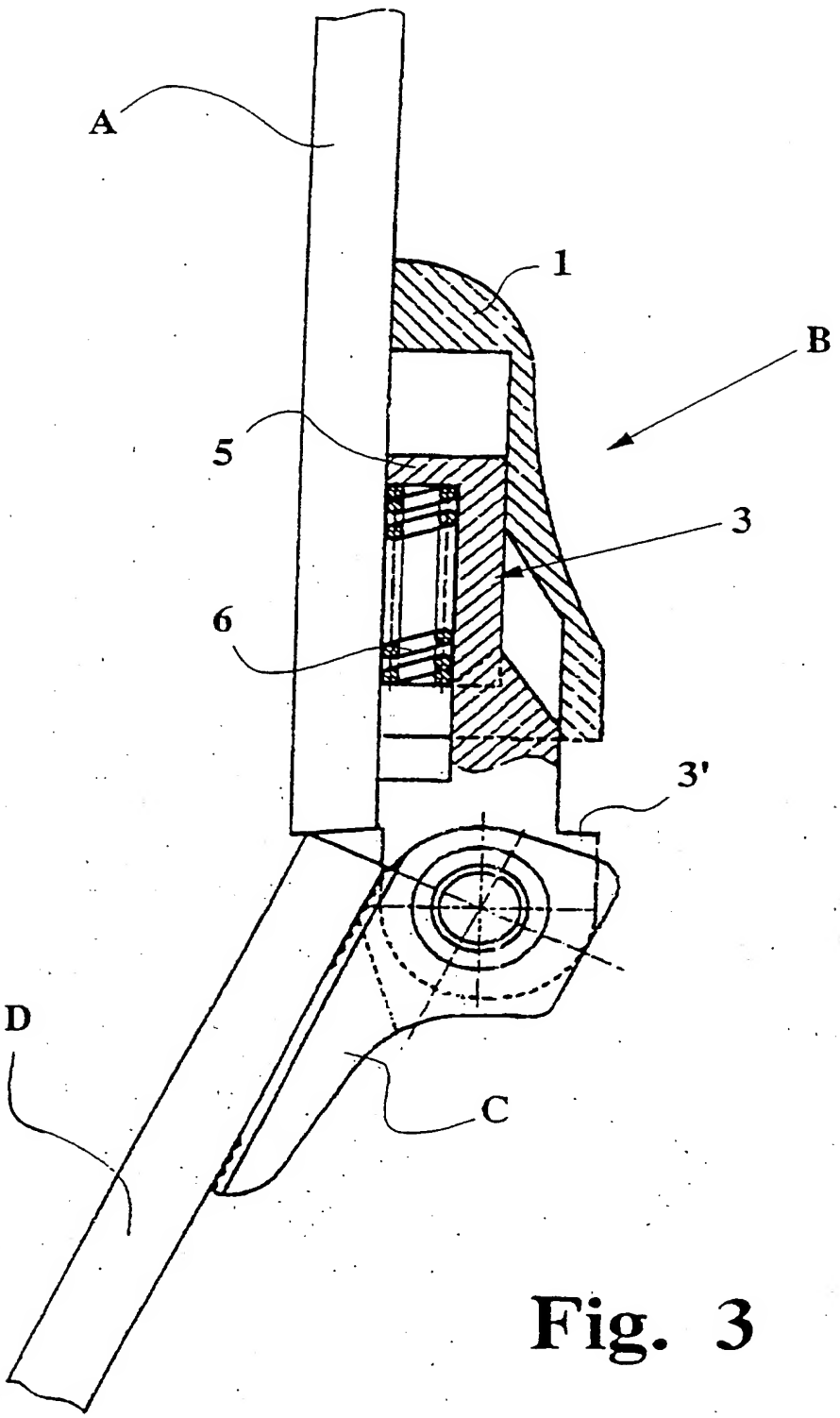

Fig. 3

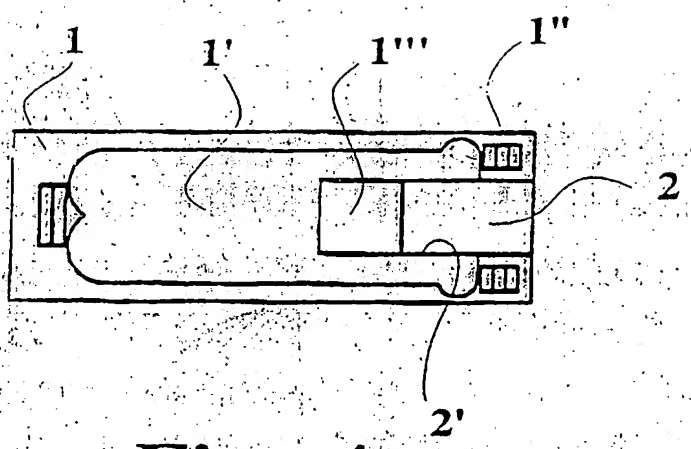

Fig. 4

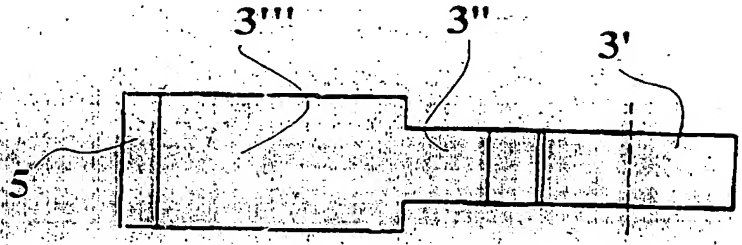

Fig. 6

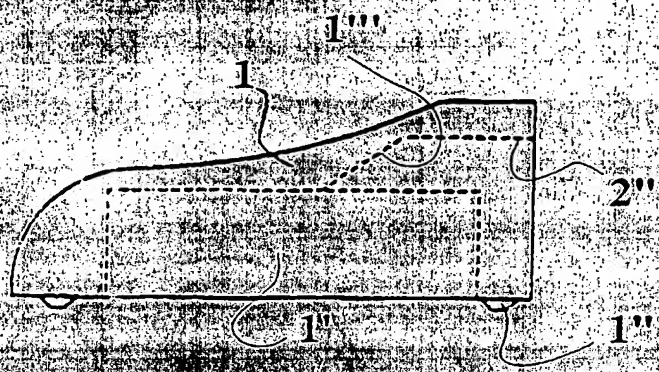

Fig. 5

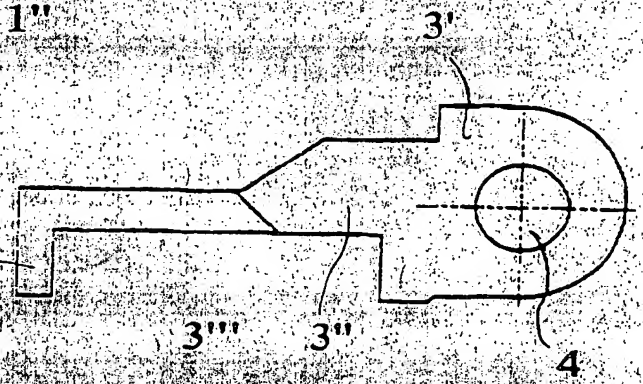

Fig. 7

INTERNATIONAL SEARCH REPORT

Inte onal Application No
PCT/IT 97/00108

A. CLASSIFICATION OF SUBJECT MATTER
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Minimum documentation searched (classification system followed byclassification symbols)
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Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 29 48 113 A (MENRAD FERDINAND FA) 4 June 1981 see page 3 - page 4	1
A	FR 2 097 211 A (R. GIROD) 3 March 1972 see page 1 - page 2, line 4	1
A	EP 0 462 936 A (NATIONALE SA) 27 December 1991 see column 1, line 16 - column 2, line 45	1
A	EP 0 239 011 A (VISOTTICA SPA) 30 September 1987 see abstract	1

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Information on patent family members

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PCT/IT 97/00108

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 2948113 A	04-06-81	NONE	
FR 2097211 A	03-03-72	NONE	
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EP 0239011 A	30-09-87	NONE	

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